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PTO/SB/08A (08-00)

Approved for use through 10/31/2002. CMB 0831-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449A/PTO

INFORMATION DISCLOSURE
STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet 1 of 5

Complete if Known

Application Number	(filed herewith)
Filing Date	August 8, 2001
First Named Inventor	Becker et al.
Group Art Unit	
Examiner Name	
Attorney Docket Number	11762.0284.CNUS01

U.S. PATENT DOCUMENTS						
Examiner Initials*	Cite No. ¹	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code ² (if known)			
gag	A1	4,734,157		Carbaugh et al.	03-28-1988	
	A2	4,789,660		Yan	12-08-1988	
	A3	4,877,841		Dory	10-31-1989	
	A4	4,324,811		Vogel et al.	04-13-1982	
	A5	4,912,081		Noor	03-27-1990	
	A6	4,568,410		Thomquist	02-04-1988	
	A7	3,479,237		Bergh et al.	11-18-1969	
	A8	4,871,855		Stefano et al.	11-20-1990	
	A9	5,013,388		Long et al.	05-07-1991	
	A10	5,040,046		Chhabra et al.	08-13-1991	
gag	A11	4,244,752		Henderson et al.	01-13-1981	
	A12	4,374,698		Sanders et al.	02-22-1983	
	A13	4,581,101		Senouze et al.	04-08-1988	
	A14	5,043,790		Butler	08-27-1991	
	A15	5,013,692		Kuo et al.	05-7-1991	
	A16	4,878,420		Bach	12-18-1990	
	A17	4,180,432		Clark	12-25-1979	
	A18	4,734,152		Gels et al.	03-28-1988	
	A19	5,021,121		Groechel et al.	08-04-1991	
	A20	4,439,270		Powell et al.	03-27-1984	

FOREIGN PATENT DOCUMENTS								
Examiner Initials*	Cite No. ¹	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear	T ₀
		Office ²	Number ³	Kind Code ⁴ (if known)				
	B1	JP	58-53833		Okano	03-30-1998		
	B2	JP	1-15930		Omoto	01-19-1989		
	B3	JP	2-62038		Kadamura	03-01-1990		
	B4	JP	4-296032		Nobeshima	10-21-1992		
	B5	JP	4-180222		Mashiro	06-28-1992		
	B6	EP	651434		Yank et al.	05-03-1995		

Examiner Signature	George Goudreau	Date Considered	9-031
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¹ Unique citation designation number. ² See attached Kinds of U.S. Patent Documents. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet	2	of	5
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Complete if Known

Application Number	(filed herewith)
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Filing Date	August 6, 2001
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First Named Inventor	Becker et al
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Group Art Unit

Examiner Name:

Attorney Docket Number

11762.0284.CNUS01

U.S. PATENT DOCUMENTS

U.S. PATENT DOCUMENTS						
Examiner Initials	Cite No.	U.S. Patent Document		Name of Patentee or Applicant of Claim Document	Date of Publication of Claim Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code ² (if known)			
JAG	A21	5,376,233		Man	12-27-1994	
	A22	5,338,398		Szwedkowski et al.	8-18-1994	
	A23	5,310,618		Nakamura et al.	05-31-1994	
	A24	5,479,789		Yanai et al.	11-28-1995	
	A25	4,892,753		Wang et al.	01-09-1990	
	A26	4,870,245		Price et al.	09-29-1989	
	A27	5,423,945		Marks et al.	06-13-1995	
	A28	5,242,536		Hamrah et al.	09-07-1993	
	A29	5,481,290		Saffeder	09-19-1995	
	A30	5,558,501		Collins et al.	09-17-1998	
JAG	A31	5,477,976		Rice et al.	12-29-1995	
	A32	5,286,344		Bialock et al.	02-16-1994	
	A33	5,083,277		Arms et al.	03-03-1992	
	A34	4,241,185		Hughes et al.	12-23-1990	
	A35	4,439,270		Powell et al.	03-27-1994	
	A36	5,286,687		Lin et al.	02-16-1994	
	A37	5,384,804		Ho et al.	11-15-1994	
	A38					
	A39					
	A40					

FOREIGN PATENT DOCUMENTS

[illegible]

**Examiner
Signature**

George Goudreau

Date Considered

9-03

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Sheet 3 of 5

Complete if Known

Application Number	(filed herewith)
Filing Date	August 6, 2001
First Named Inventor	Becker et al.
Group Art Unit	
Examiner Name	
Attorney Docket Number	11762.0284.CNUS01

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	C1	"Crown-Shaped Capacitor Cell for 1.5V. Operation 65 Mib DRAMS" (Tom Kage, et al.) IEEE Transactions on Electron Devices, vol. 38, No. 2, 1991.	
	C2	"VLSI Device Fabricator Using Unique, Highly-selective Si3N4 Dry Etching" (T. Kur et al.) Proceeding of the International Electron Devices Meeting (IEDM), 1993, pp. 757-759.	
	C3	"Formation of Contacts in a Planarized SiO2/Si3N4/SiO2 Dielectric Structure" (Paul E. Riley, Konrad K. Youn, and Charles C. Liu) J. Electrochem Soc. vol. 139, No. 9 Sep. 1992.	
	C4	A method of obtaining a high oxide to nitride selectivity in an MERIE Reactor, by David S. Becker, Guy Stalock, 1993 Symposium of Dielectric Science and Technology and Electronics Divisions of The Electrochemical Society, vol. 93-21, pp. 178-189 (May 18, 1993).	
	C5	"Selective Oxide/Nitride Dry Etching in a High Density Plasma Reactor" by M. Amooos, J. Marks, 1993 Symposium of Dielectric Science and Technology and Electronics Divisions of The Electrochemical Society, vol. 93-21, pp. 190-200 (May 19, 1993).	
	C6	"Self-Aligned Bitline Contact for 4 Mbit Dram", K.H. Kuesters, H.M. Muekhoff, G. Enders, E.G. Mohr, W. Mueller, pp. 640-649, 1997.	
	C7	"A Buried-Plate Trench Cell for a 64-Mb Dram", Kerney et al., 1992 Symposium of VLSI, IEEE.	
	C8	"A High Density 4Mbit DRAM Process Using a Fully Overlapping Bitline Contact (FoBIC) Trench Cell", Corporate Research and Technology, K.H. Kuesters, G. Enders, W. Meyberg, H. Benzinger, B. Haeber, G. Higelin, S. Rohd, H.M. Muekhoff, W. Muller, 1997 Symposium on VLSI Technology Digest of Technical Papers, pp. 83-84.	
	C9	"High-Rate and Highly Selective Etching of SiO2 Using Microwave Plasma", M. Nawata, Y. Kaketsu, S. Kanai, Y. Kawasaki, K. Tsunokuni, and H. Enami, 1993 Meeting Electrochemical Society, Honolulu, Hawaii, pp. 228-234 (1993).	
	C10	"Influence of Reactant Transport on Fluorine RIE of Deep Trenches in Si", J.C. Arnold, D.C. Gray and H. H. Swain, J. Vac. Sci. Technol. B vol. 11, No. 6, pp. 2071-2080 (Nov. 1993).	
	C11	"Influence of Different Etching Mechanisms on the Angular Dependence of Si3N4 Etching", A.M. Barklund and H.O. Blom, J. Vac. Sci. Technol. A vol. 11, No. 4, pp. 1228-1229, (Jul. 1993).	

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**INFORMATION DISCLOSURE
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Sheet 4 of 5

Complete if Known

Application Number	(filed herewith)
Filing Date	August 6, 2001
First Named Inventor	Becker et al.
Group Art Unit	
Examiner Name	
Attorney Docket Number	11762.0284.CNUS01

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	C12	"Mass Spectrometric Studies of Plasma Etching of Si3N4", P.E. Clarke, D. Field, A.J. Hydes, D.F. Kemperer and M.J. Seakins, J. Vac. Sci. Technol. B vol. 3, No. 6, pp. 1614-1619, Nov. 1985).	
	C13	"Microtrench Formation in Polysilicon Plasma Etching Over Thin Gate Oxide", T.J. Dalton, J.C. Arnold, H.M. Sawin, S. Swan, and D. Corliss, J. Electrochem. Soc., vol. 140, No. 8, pp. 2355-2401 (Aug. 1993).	
	C14	"Radical Kinetics in a Fluorocarbon Etching Plasma," Y. Hikosaka and H. Sugai, Jpn. Appl. Phys., vol. 32, No. 6, pp. 3040-3044 (Jun. 1993).	
	C15	"Plasma Etching of Polysilicon/Nitride/Polysilicon Sandwich Structure for Sensor Applications," Y.X. Li, M. Laros, P.M. Sarro, P.J. French and R.F. Wollenbuttel, Microelectron. Engrg., 21, pp. 341-344 (1993).	
	C16	"RIE of Silicon Nitride Deposited by Different Methods in CF4/H2 Plasmas," J.L. Lindstrom, G.S. Oehrlein and W.A. Lanford, J. Electrochem. Soc., vol. 139, No. 1, pp. 317-320 (Jan. 1992).	
	C17	"Time-Modulated ECR Plasma Discharge for Controlling Polymerization in SiO2 Etching," S. Samukawa, Jpn. J. Appl. Phys., vol. 32, Part 1, No. 12B, pp. 6080-6087 (Dec. 1993).	
	C18	"Suppression of Microloading Effect by Low-Temperature SiO2 Etching," M. Sato, D. Takerhara, K. Uda, K. Sakiyama and T. Hara, Jpn. J. Appl. Phys., vol. 31, No. 12B, pp. 4370-4375 (Dec. 1992).	
	C19	"Novel Surface Reaction Model in Dry-Etching A. Misaka, K. Harafuji, M. Kubota and N. Nomura, Process Simulator," Jpn. J. Appl. Phys., vol. 31, No. 12B, pp. 4363-4369, (Dec. 1992).	
	C20	"Silicon Etching Mechanisms in a CF4/H2 Glow Discharge," G.S. Oehrlein and H.L. Williams, J. Appl. Phys., vol. 62, No. 2, pp. 662-672 (Jul. 1987).	
	C21	"SiO2 Tapered Etching Employing Magnetron Discharge of Fluorocarbon Gas," T. Ohwa, K. Morioka, T. Arakado, I. Hasegawa and H. Okano, Jpn. J. Appl. Phys., vol. 31, Pt. 1, No. 2A, pp. 405-410 (1992).	
	C22	"Gas Mixing to Prevent Polymer Formation During Reactive Ion Etching", Bondur et al., IBM Tech. Disclosure Bulletin, vol. 21, No. 10, Mar. 1978, pp. 4018.	

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SignatureDate
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INFORMATION DISCLOSURE
STATEMENT BY APPLICANT

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Sheet 5 of 5

Complete if Known

Application Number	(filed herewith)
Filing Date	August 6, 2001
First Named Inventor	Becker et al.
Group Art Unit	
Examiner Name	
Attorney Docket Number	11762.0284.CNUS01

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	C23	"Plasma Cleaning by Use of Hollow-Cathode Discharge in a Trifluoromethane-Silicon Dioxide Dry Etching System," Watanabe, Feb. 1992, Japanese Journal of Applied Physics, Part 1, 31 (5A), pp. 1491-1498. *	
	C24	Loewenstein, "Temperature Dependence of Silicon Nitride Etching by Atomic Fluorine", American Institute of Physics, 1988, vol. 65, No. 1, pp. 386-387.	
	C25	Loewenstein, "Selective Etching of Silicon Nitride Using Remote Plasmas of CF ₄ and SF ₆ ", American Vacuum Society, 1989, vol. 7, No. 3, pp. 688-690.	
	C26	Yasuaki Nagahiro, "Self Aligned Contact Development Activity Increases Aimed for Large Scale Manufacturing Around 0.25 Mm Era Problem of Etching Technology: Improvement of Si3N4 Selectivity Ratio", Nikkel Microdevices, Feb. 1995, pp. 54-61. *	
	C27	"Gas Mixing to Prevent Polymer Formation During Reactive Ion Etching", J.A. Bondur and C.F. Crimi, IBM Technical Disclosure Bulletin, vol. 21, No. 10, Mar. 1978.	
	C28	"Developments in Plasma Processing", R.A. Gottscho, AT&T Bell Labs, 1994 American Vacuum Society Symposium, p. 120. *	
	C29	"Self-Aligned Contact (SAC) Dry Etch Process of 0.5u SRAM Technology", J.E. Nully, P.S. Trammell, Cypress Semiconductor, 1994 American Vacuum Society Symposium, p. 120. *	
	C30		
	C31		
	C32		
	C33		

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Form PTO-1449 (modified)

List of Patents and Publications for Applicant's
INFORMATION DISCLOSURE STATEMENT

(Use several sheets if necessary)

Atty. Docket No.
11762.0284.CNUS01Serial No.
09/923,058Applicant
Becker, et al.Filing Date:
August 06, 2001Group:
1763U.S. Patent Documents
See Pages 1-2Foreign Patent Documents
See Page 2Other Art
See Pages 3-4

U.S. Patent Documents

Exam. Init.	Ref. Des.	Document Number	Date	Name	Class	Sub Class	Filing Date of App.
gag	A1	5,772,832	06/30/98	Collins, et al.	156	345	04/04/97
	A2	5,888,414	03/30/99	Collins, et al.	216	68	09/24/97
	A3	6,194,325	02/27/01	Yang, et al.	438	740	12/04/95
	A4	5,880,037	03/09/99	Arleo, P.	438	740	10/09/97
	A5	5,477,975	12/26/95	Rice, et al.	216	68	10/15/93
	A6	5,556,501	09/17/96	Collins, et al.	156	345	04/04/93
	A7	6,184,150	02/06/01	Yang, et al.	438	740	10/27/97
	A8	5,562,801	10/08/96	Nulty, J.E.	156	643.1	12/07/94
	A9	4,350,578	09/21/82	Frieser, et al.	204	192 R	05/11/81
	A10	4,368,092	01/11/83	Steinberg, et al.	156	345	08/05/81
	A11	4,377,438	03/22/83	Moriya, et al.	156	643	09/22/81
	A12	4,401,054	08/30/83	Matsuo, et al.	118	723	04/27/81
	A13	4,492,620	01/08/85	Matsuo, et al.	204	192 R	09/09/83
	A14	4,511,430	04/16/85	Chen, et al.	156	643	01/30/84
	A15	4,675,073	06/23/87	Douglas, M.	156	643	03/07/86
	A16	4,711,698	12/08/87	Douglas, M.	156	643	07/15/85
	A17	4,778,561	10/18/88	Ghanbari, E.	156	643	10/30/87
	A18	4,807,016	02/21/89	Douglas, M.	357	67	11/20/87
	A19	4,918,031	04/17/90	Flamm, et al.	437	225	12/28/88
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	A21	5,091,326	02/25/92	Haskell, J.D.	437	43	09/12/90
	A22	5,269,879	12/14/93	Rhoades, et al.	156	643	10/16/91
gag	A23	5,296,095	03/22/94	Nabeshima, et al.	156	662	10/30/91

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George Gould ream

DATE CONSIDERED:

9-031

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INFORMATION DISCLOSURE STATEMENT — PTO-1449 (MODIFIED)

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Form PTO-1449 (modified)

List of Patents and Publications for Applicant's

INFORMATION DISCLOSURE STATEMENT

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Atty. Docket No.

11762.0284.CNUS01

Serial No.

09/923,058

Applicant

Becker, et al.

Filing Date:

August 06, 2001

Group:

1763

U.S. Patent Documents

See Pages 1-2

Foreign Patent Documents

See Page 2

Other Art

See Pages 3-4

U.S. Patent Documents

Exam. Init.	Ref. Des.	Document Number	Date	Name	Class	Sub Class	Filing Date of App.
	A24	5,429,710	07/04/95	Akiba, et al.	216	17	02/16/94
	A25	5,468,342	11/21/95	Nulty, et al.	156	643.1	04/28/94
	A26	5,503,901	04/02/96	Sakai, et al.	428	161	06/29/94
	A27	5,880,036	03/09/99	Becker, et al.	438	740	11/15/93
	A28						
	A29						

Foreign Patent Documents

Exam. Init.	Ref. Des.	Document Number	Date	Country	Class	Sub Class	Translation Yes/No
	B1	0520519 A1	12/30/92	EPO			Yes
	B2	55009464	01/23/80	Japan	H01L	27/08	Abstract Only
	B3	0 050 972 A2	05/05/82	EPO	H01L	21/88	Yes
	B4	57210631	12/24/82	Japan	H01L	21/302	Abstract Only
	B5	60111474	06/17/85	Japan	H01L	29/80	Abstract Only
	B6	61-224423	10/06/86	Japan	H01L	21/302	Abstract Only
	B7	0 265 584 A2	04/05/88	EPO	H01L	21/31	Yes
	B8	2 175 542 A	12/03/86	United Kingdom	C23F	1/02	Yes
	B9	2062038	03/01/90	Japan	H01L	21/302	Abstract Only
	B10	0 552 490 A1	07/28/93	EPO	H01L	21/311	Yes
	B11	0 644 584 A1	03/22/95	EPO	H01L	21/311	Yes
	B12						

EXAMINER: George Goudreau

DATE CONSIDERED: 9-031

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INFORMATION DISCLOSURE STATEMENT — PTO-1449 (MODIFIED)

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Form PTO-1449 (modified)

List of Patents and Publications for Applicant's

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Serial No.

09/923,058

Applicant

Becker, et. al.

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August 06, 2001

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1763

U.S. Patent Documents

See Pages 1-2

Foreign Patent Documents

See Page 2

Other Art

See Pages 3-4

Other Art (Including Author, Title, Date Pertinent Pages, Etc.)

Exam. Init.	Ref. Des.	Citation
	C1	Watanabe, S., "Plasma Cleaning by Use of Hollow-Cathode Discharge in a CHF ₃ -SiO ₂ Dry-Etching System", <i>Japanese J. Appl. Physics</i> 1992, 31; 1491-1498.
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	C11	Moss, S.J., et al. Eds. "Plasma Etching", in <i>The Chemistry of the Semiconductor Industry</i> , New York: Blackie & Son Ltd., 1987, pp. 374-378.
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Serial No.

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Applicant

Becker, et al.

Filing Date:

August 06, 2001

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1763

U.S. Patent Documents

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Foreign Patent Documents

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Other Art

See Pages 3-4

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	C13	Riley, P.E.; Hanson, D.A., "Comparison of Etch Rates of Silicon Nitride, Silicon Dioxide, and Polycrystalline Silicon Upon O ₂ Dilution of CF ₄ Plasmas", <i>Journal of Vacuum Science and Technology B</i> 1989, 7(6); 1352-1356.
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	C15	Gilboa, H.; Hata, W.; O'Donnell, K., "Nondestructive Characterization of RIE Induced Radiation Damage Using Surface Acoustic Waves", <i>Mat. Res. Soc. Symp. Proc.</i> 1985, 38 511-517.
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David S. Becker, et al.

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U.S. Patent Documents

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Foreign Patent Documents

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Other Art

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	A1						

Foreign Patent Documents

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Other Art (Including Author, Title, Date Pertinent Pages, Etc.)

Exam. Init.	Ref. Des.	Citation
gag	C1	Complaint for Declaratory Relief, filed in <i>Sandisk Corp. v. Micron Tech., Inc.</i> , Case. No. C-02-2627VRW (N. D. Cal.).
	C2	

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